

PETROLEUM ENVIRONMENTAL SOLUTIONS

FY2002 Expanded Activity

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The U.S. Department of Energy's (DOE) Office of Fossil Energy (FE) has developed a Clean Liquid Fuels Program whose overall goal is to promote the development and deployment of technologies that will produce clean, high performance fuels from a variety of secure energy resources. The program addresses key technical and policy issues that span the production, processing, delivery, and end-use of these fuels. The Clean Liquid Fuels Program has five major elements: Exploration, Production and Transport of Petroleum Crude; Petroleum Environmental Solutions; Ultra-Clean Fuels; Future Fuels; and Infrastructure Reliability and Product Integrity. The Petroleum Environmental Solutions program element (a proposed New Activity for FY2002) is discussed below.

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The Petroleum Environmental Solutions program element discussed below contains both an activity with an existing budget (i.e. Effective Environmental Protection) and a proposed Expanded Activity for FY2002. The new funding component will enable an expansion of the existing program to address legacy environmental liabilities; regulatory streamlining, risk assessment, and technology development; improved refinery environmental performance; and improved refinery feedstocks.

WEBSITE

www.netl.doe.gov



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Background

The U.S. refining industry is in a critical situation. Refineries in the U.S. are operating at greater than 95% capacity. This means relatively minor disruptions can (and recently have) caused serious supply and price shocks to fuels on a regional or national basis.

New transportation fuel requirements are forcing the industry to make expensive changes to existing refineries. At the same time, the crude oils coming into the refineries are heavier and more expensive to refine. On top of this, compliance with the environmental regulations that govern the operation of the refineries has become increasingly expensive and complex. In some cases, refiners have difficulty getting the environmental permits they need in order to modify their plants to meet the new environmental requirements for the fuels that they produce.

The economic burden of environmental regulations is severe. The return on investment for refineries has always been low, and capital investment to meet environmental regulations is seldom recouped. Ever-more stringent emissions requirements, coupled with a lengthy permit process to install required new units are making it difficult for many refineries in the U.S to continue to operate. The economic and regulatory climate for refiners is such that new technologies that could produce cleaner fuels and reduce refinery emissions are not installed until there is a substantial operating history somewhere else.

In addition to high operating costs relative to the rest of the world, U.S. refiners also face enormous and undefined clean-up costs. While it is clear that contaminated sites must be cleaned up, the costs cannot be accurately predicted, and the process for determining clean-up requirements is lengthy. This uncertainty makes it difficult for companies to justify the capital needed for new units or new refineries. These environmental liabilities make it even more unlikely that new refineries will be built in the U.S. under the current regulatory environment. If we do not increase, or at least maintain our current refinery capacity, U.S. refineries will not be able to provide the affordable, readily available transportation fuels that the public demands and the economy needs. If we must import a significant percentage of our refined fuels the consequences would be drastic, including:

- Higher gasoline and diesel prices. These refined products are more dangerous and expensive to transport than crude oil.
- Reduced energy security. By relying on imported fuels, the U. S. is doubly dependent on foreign suppliers for both the oil and the refined products it needs.
- Collapse of the domestic E&P industry. A healthy domestic refining industry is needed to process U.S. crude oils. Without domestic refining, an already struggling E&P industry would have no market for its product. This would result in hundreds of thousands of lost jobs and serious budget impacts to producing states.
- Increased environmental risk. The risk to human health and the environment from a major gasoline or diesel spill is greater than for oil spills, a greater likelihood as more products are imported.

Description

The Petroleum Environmental Solutions program element will:

- Reduce the cost of cleaning refinery sites by encouraging the cross application of DOE's advanced Decommissioning and Decontamination technologies;
- Develop new lower-cost technologies for characterizing and cleaning up refinery contamination;
- Develop new, lower cost environmental compliance technologies;
- Work with State and Federal agencies to streamline the permitting process for new refinery units (stretch capacity) and new refineries (new capacity);
- Provide scientific support for a holistic, multi-media (air, soil, and water) approach to environmental permitting and regulation;
- Work with State and Federal regulators to develop innovative approaches, such as the Brownfields Redevelopment program, to reduce the uncertainties of environmental liability associated with building or expanding refineries;
- Develop novel technologies to upgrade heavier and sourer crudes in advance of the refinery; and
- Develop measurement and control technologies to prevent leaks and contaminations occurring during the production and transportation of crude oil from the field to the refinery.

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Benefits

This program element will ensure the reliable, readily available, low cost fuels that our Nation needs in harmony with the environmental protection vital to our quality of life by:

- Allowing new refineries to be built or existing ones modified at lower cost and lesser impact to the environment;
- Protecting our domestic oil producing industry by ensuring adequate domestic refining capacity; and
- Ensuring safe and lower cost cleanup in instances where legacy environmental problems exist.

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